DETAILED ACTION

Response to Amendment

1. The amendment filed on 07-20-2009 has been entered and considered.

Claims 1-23 are pending in this application.

Claims 1-23 remain rejected as discussed below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 7-12, 16, 17 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lay (US 2005/0033531) in view of Chen et al (US 6,351,785) and Drummond-Murray (US 6,667,985).

For claim 1, Lay discloses a method comprising: determining network parameters corresponding to a network (see paragraph 0026; wherein "the resource management measures resource usage of receiving buffers of the network connected to the router 160"); determining host interface parameters corresponding to a host (see paragraph 0026; wherein "the resource management measures resource usage of destination buffers connected to one of the hosts 120-140"); setting a storage threshold capacity of a storage device based on at least one network parameter and at least one host interface parameter (see Figure 2; wherein resource measurement engine control the

threshold capacity in the flow control logic and [0026] lines 4-7; congestion status reached "threshold" based on a specific port usage and other values); and transmitting a request to stop transmission of traffic to the storage device based the storage device exceeding the storage threshold capacity (see Figure 2; wherein pause on engine transmits a pause frame when exceeding the threshold). Lay discloses all the subject matter with the exception of explicitly disclosing that the storing device is to only store data to be communicated between the host and the network. However, Chen et al discloses a storing device is to only store data to be communicated between the host and the network (see column 5 lines 59-65 and Figure 1 and Figure 3: element 118; NIC which is connected to network 120 and stores outgoing traffic and also stores incoming traffic into FIFO 140). Thus, it would have been obvious to the one skill in the art at the time of the invention to implement the method of Chen et al into the invention of Lay for the purpose of connecting the whole network to a single host via the storage device for processing, implementing flow control and maximizing the storage capacity for the single host. Lay further discloses the transmission of the request to pause transmission of traffic to the storage device (see Figure 2; wherein pause on engine transmits a pause frame when exceeding the threshold). Lay in view of Chen discloses all the subject matter with the exception of explicitly disclosing wherein the request is to comprise a pause time field to indicate a time period. However, Drummond-Murray discloses wherein the request is to comprise a pause time field to indicate a time period to pause transmission of traffic to the storage device (see Fig.2 and see col.4 line 55 to col. 5 line 3). Thus, it would have been obvious to the one skill in the art at the time of

the invention to use the request that has pause time field as taught by the invention of Drummond-Murray into the method of Lay in view of Chen for the purpose of specifying the pause time of transmission in advance instead of transmitting two different packets (ON and OFF packets) and therefore saving the network resources and preventing lost/dropping of the data.

For claims 2 and 11, Lay further discloses a method and an apparatus further comprising adjusting the storage threshold capacity based on changes to a network parameter (See Figure 5; wherein the change in measuring resource which can depend on the network parameter (receiving buffers) cause the transmission of a pause frame in case of exceeding the threshold or going back to measuring the resource usage in case of not exceeding the threshold).

For claims 3 and 12, Lay further discloses a method and an apparatus further comprising adjusting the storage threshold capacity based on changes to a host interface parameter (See Figure 5; wherein the change in measuring resource which can depend on the host interface parameter (destination buffers) cause the transmission of a pause frame in case of exceeding the threshold or going back to measuring the resource usage in case of not exceeding the threshold).

For claim 7, Lay further discloses a method further comprising transmitting a request to allow transmission of traffic (see Figure 5; wherein the transmission of Pause off packet is a request to allow transmission of traffic).

For claims 8 and 16, Lay further discloses an apparatus and a system comprising: a host system comprising a processor and a memory (see Figure 1, switch

150; inherently, switch 150 has a processor and a memory to function); an interface (see Figure 1, the connection between switch 110 and switch 150); a storage device to store received traffic (see Figure 1; wherein a storage device is inherent in the switch 110 since the adaptive flow control system measures the resources as shown in Figure 2 and the storage device is mentioned in paragraph 0026; wherein "the resource management measures resource usage of receiving buffers"); and a controller to manage the transmission of traffic to the storage device (see Figure 1, adaptive flow control system), wherein the controller is configured to: determine at least one network parameter corresponding to a network (see paragraph 0026; wherein "the resource management measures resource usage of receiving buffers of the network connected to the router 160"); determine at least one host interface parameter corresponding to a host (see paragraph 0026; wherein "the resource management measures resource usage of destination buffers connected to one of the hosts 120-140"); set a storage threshold capacity of the storage device based on at least one network parameter and at least one host interface parameter (See Figure 5; wherein the change in measuring resource which can depend on the host interface parameter and network parameter (receiving buffers and destination buffers) and [0026] lines 4-7; congestion status reached "threshold" based on a specific port usage and other values) cause the transmission of a pause frame in case of exceeding the threshold or going back to measuring the resource usage in case of not exceeding the threshold); monitor storage conditions of a storage device (see Figure 5; the loopback to measuring the resource usage in case of not exceeding the threshold) ; and transmit a request to stop

transmission of traffic based on the storage device exceeding the storage threshold capacity (see Figure 5; wherein pause on frame has been transmitted when exceeding the threshold). Lay discloses all the subject matter with the exception of explicitly disclosing that the storing device is to only store data to be communicated between the host and the network. However, Chen et al discloses a storing device is to only store data to be communicated between the host and the network (see column 5 lines 59-65 and Figure 1 and Figure 3: element 118; NIC which is connected to network 120 and stores incoming traffic into FIFO 140). Thus, it would have been obvious to the one skill in the art at the time of the invention to implement the method of Chen et al into the invention of Lay for the purpose of connecting the whole network to a single host via the storage device for processing, implementing flow control and maximizing the storage capacity for the single host. Lay further discloses the transmission of the request to pause transmission of traffic to the storage device (see Figure 2; wherein pause on engine transmits a pause frame when exceeding the threshold). Lay in view of Chen discloses all the subject matter with the exception of explicitly disclosing wherein the request is to comprise a pause time field to indicate a time period. However, Drummond-Murray discloses wherein the request is to comprise a pause time field to indicate a time period to pause transmission of traffic to the storage device (see Fig.2 and see col.4 line 55 to col. 5 line 3). Thus, it would have been obvious to the one skill in the art at the time of the invention to use the request that has pause time field as taught by the invention of Drummond-Murray into the method of Lay in view of Chen for the purpose of specifying the pause time of transmission in advance instead of

transmitting two different packets (ON and OFF packets) and therefore saving the network resources and preventing lost/dropping of the data.

For claim 9, Lay in view of Chen and Drummond-Murray further discloses an apparatus further comprising a physical layer interface to transfer received traffic to the storage device (see Lay: Figure 1, the physical layer that connects elements 120, 130 and 140 to the switch 110 and/or Chen: Figure 2; 118).

For claim 10, Lay further discloses an apparatus wherein the controller is further configured to perform media access control processing in compliance with IEEE 802.3x (see Figure 1, wherein the system is Full Duplex and flow control which are the description of the Ethernet standard of 802.3x dated 1997).

For claim 17, Chen further discloses the use of PCI interface (Figure 3: element 102; PCI bus and see column 8 lines 44-56).

For claim 19, Lay in view of Chen and Drummond-Murray Further discloses a system further comprising a storage device coupled to the interface (see Chen: Figure 3; PCI bus interface and/or see Lay: Figure 1, the connection between switch 110 and switch 150; wherein the storage device is inherent in the switch 110).

For claim 20, Lay in view of Chen and Drummond-Murray further discloses a system wherein the network parameters correspond to a network coupled to the storage device via a link partner that transmits traffic to the storage device (see Lay Figure 1, wherein switch 150 is connected through link to switch 110 that has storage for received traffic from the network and/or Chen: Figure 1; the network 120 which inherently comprises a plurality of switches/hubs/routers/link partners).

For claims 21-22, Lay in view of Chen and Drummond-Murray further discloses a physical medium to couple the storage device to a switch/hub, wherein the storage device is to couple to the network via the switch/hub (see Lay: Figure 1 wherein the router is considered the network that is couple the switch/hub "150' by the physical medium "the connection line to the elements" to the storage device "110" and/or Chen: Figure 1; the network 120 which inherently comprises a plurality of switches/hubs/routers/link partners).

For claim 23, Lay in view of Chen and Drummond-Murray further discloses a host interface to couple the host and the storage device (see Chen: Figure 3; PCI bus interface and/or figure 1 the connection between PC "120" and element 110), wherein the host interface is to allow the host to communicate with the network via the storage device (see figure 1 wherein PC "120" is communicating to the network connected to the router "160" via the storage device "110").

3. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lay in view of Chen et al and Drummond-Murray and further in view of Middleton et al (US 2005/0207387) hereinafter is referred to as Middleton and further in view of Hao (US 2003/0172220).

For Claims 4 and 13, Lay further suggested that the network parameter could be besides the receiving buffers, and total resource usage, any other factors of the switch (see paragraph 0026). Lay in view of Chen and Drummond-Murray disclose all the subject matter with the exception of wherein the network parameter includes a plurality of: link speed of a network that transmits traffic to the storage device; signal propagation

speed of a physical medium that transfers traffic from the network to the storage device and length of the physical medium that transfers traffic. However, Middleton discloses a method wherein the network introduces some parameters which are link speed of a network that transmits traffic to the storage device (see [0055] lines 1-7); signal propagation speed of a physical medium that transfers traffic from the network to the storage device and length of the physical medium that transfers traffic (see [0054 lines 1-6). Thus, it would have been obvious to the one skill in the art at the time of the invention to use Middleton's network parameters into the system of Lay in view of Chen and Drummond-Murray for the purpose of identifying the delay introduced by the network and therefore reducing that delay. Lay in view of Chen and Drummond-Murray and further in view of Middleton discloses all the subject matter with the exception of disclosing the maximum frame size of packets in the traffic as another network parameter. However, Hao from the same or similar field of endeavor teaches the use of a flow controller (see Figure 1, Snooping Module element 140) that uses the maximum frame size of packets in the traffic as a network parameter to control the storage threshold capacity (see paragraph 0023). Thus, it would have been obvious to the one skill in the art at the time of the invention to use the functions of the Snooping Module as taught by Hao into the system of lay in view of Chen and Drummond-Murray and further in view of Middleton for the purpose of increasing the system efficiency and easing the flow traffic to avoid any loss of data or overflow.

4. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lay in view of Chen and Drummond-Murray and further in view of Benayoun et al (US 6,789,130).

For Claims 4 and 13, Lay further suggested that the network parameter could be besides the receiving buffers, and total resource usage, any other factors of the switch (see paragraph 0026). Lay in view of Chen and Drummond-Murray disclose all the subject matter with the exception of wherein the network parameter includes a plurality of: link speed of a network that transmits traffic to the storage device; signal propagation speed of a physical medium that transfers traffic from the network to the storage device, length of the physical medium that transfers traffic and maximum frame size of packets in the traffic. However, Benayoun et al discloses a method wherein the network introduces some parameters which are link speed of a network that transmits traffic to the storage device; signal propagation speed of a physical medium that transfers traffic from the network to the storage device; length of the physical medium that transfers traffic; and maximum frame size of packets in the traffic (see column 1 lines 25-50; L/C >or= 2l/V, wherein: V is the signal propagation speed on the link, C is the capacity of the network in bits/s, L is the minimal length of a frame in bits, l is the length of the link). Thus, it would have been obvious to the one skill in the art at the time of the invention to use Benayoun et al network parameters into the system of Lay in view of Chen and Drummond-Murray for the purpose of identifying the delay introduced by the network and therefore reducing that delay, increasing the system efficiency and easing the flow traffic to avoid any loss of data or overflow.

5. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lay in view of Chen and Drummond-Murray and further in view of Kasper (US 2002/0133647).

For Claims 5 and 14, Lay in view of Chen and Drummond-Murray disclose all the subject matter without explicitly showing wherein the host interface parameter comprises a local bus speed and number of bits that can be transmitted through the bus in a single cycle. However, Lay suggested that the host parameter could be besides the destination buffers and total resource usage, any other factors of the switch (see paragraph 0026) and Chen specifies that the storage device (Figure 3: element 118; NIC) is communicating with the host (Figure 3: element 100; host system) through a bus (Figure 3: element 102; PCI bus and see column 8 lines 44-56). And the transfer of data in a switch or computer is depending on the data rate that implicitly depends on the speed of the bus because the bus is a subsystem that transfers data or power between components. Also, Kasper discloses that a local bus is used between elements which is a 32 bit operating at a sufficient speed which uses single cycle word transfer (see column [0061]; 32-bit system bus in a single cycle). Thus, it would have been obvious to the one skill in the art at the time of the invention to use the bus speed and number of bits that can be transmitted through the bus in a single cycle as taught by the invention of Conley into the system of Lay in view of Chen and Drummond-Murray for the purpose of easing the flow traffic and minimizing latency.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lay in view of Chen and Drummond-Murray and further in view of Erimli et al (US 6,487,212).

For Claim 18, Lay in view of Chen and Drummond-Murray disclose all the subject matter with the exception of explicitly disclosing wherein the interface is compatible with PCI-X. However, Chen further discloses the use of PCI interface (Figure 3: element 102; PCI bus and see column 8 lines 44-56). Also, Erimli et al discloses a switch that includes a PCI interface that may serves as an expansion bus for switch devices (see column 5 lines 43-48). Thus, it would have been obvious to the one skill in the art at the time of the invention to have the interface (switch) compatible with either PCI or PCI-X since PCI-X is the later revisions of PCI added new features and performance improvements, as taught by the invention of Erimli et al into the invention of Lay in view of Chen and Drummond-Murray for the purpose of increasing the compatibility and flexibility.

7. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lay in view of Chen and Drummond-Murray and further in view of Zimmermann et al (US 2003/0161302).

For Claims 6 and 15, Lay in view of Chen and Drummond-Murray disclose all the subject matter with the exception of wherein the storage threshold capacity comprises a difference between total storage capacity of the storage device to store traffic from a link partner and a safety margin and wherein the safety margin comprises: (i) amount of bits that might be transmitted from the link partner while the request to stop transmission of traffic is prepared +(ii) amount of bits that might be transmitted from the link partner while the request to stop transmission of traffic is in transit to the link partner +(iii) amount of bits that might arrive to the storage device from the link partner while the link

partner processes the request to stop transmission of traffic +(iv) amount of bits that the link partner might have transmitted while the link partner processes the request to stop transmission of traffic -(v) amount of bits drained from the storage device during (i) through (iv). However, Zimmermann et al discloses a method wherein if the data in the buffer reaches threshold, the coming data flow is paused and therefore a safety margin is set (see paragraph 0051). Thus it would have been obvious to the one skill in the art to adapt the method of Zimmermann et al into the system of Lay in view of Chen and Drummond-Murray for the purpose of avoiding loss of data.

Response to Argument

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

9. For claims 6 and 15, Applicant repeatedly argues that Zimmermann does not teach "safety margin". Examiner respectfully disagrees; the feature of the limitation listed above is clearly met by Zimmermann. Zimmermann explicitly designates the safety margin. Zimmermann does not choose to use his own lexicography to designate the safety margin. However, the steps performed by Zimmermann are the same regardless to the terminology used. Zimmermann discloses a method wherein if the data in the buffer reaches threshold, the coming data flow is paused and therefore a safety margin is set in order *to accommodate network delays* (see paragraph 0051) and a person of ordinary skill in the art will recognize that the safety margin must comprises the data bits that may be received/transmitted while the pause frame is in the way and

haven't been processed by the receiver and that will clearly covers all the claimed limitations of claims 6 and 15.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed

by the Examiner. In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

When responding to this office action, applicants are advised to clearly point out the patentable novelty which they think the claims present in view of the state of the art disclosed by the references cited or the objections made. Applicants must also show how the amendments avoid such references or objections. See 37C.F.R 1.111(c). In addition, applicants are advised to provide the examiner with the line numbers and pages numbers in the application and/or references cited to assist examiner in locating the appropriate paragraphs.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HICHAM B. FOUD whose telephone number is (571)270-1463. The examiner can normally be reached on Monday - Friday 10-6 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pankaj, Kumar can be reached on 571-272-3011. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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